T4SC Series

T4SC-420 to T4SC-18300

NEW GENERATION SUB-COMPACT NITROGEN GAS SPRINGS









GENUINELY HYSON

Since 1964, HYSON has been dedicated to providing safer and more reliable products with worldwide support and service. We are continually at the forefront of innovative product design, and engineer forward-thinking features into our self-contained springs, which enable our customers to provide safer working environments.

Our nitrogen gas springs, which comply with all major industry standards, are designed to reduce the risk of tool damage and injuries and include at least one of the following safety features:



Overstroke Protection:

In the event of an overstroke, the HYSON cylinder is designed to fail-safe and release pressure in a predefined manner with deformation or knockout plug.



Overpressure Protection:

Designed to vent excessive gas in the event that the spring becomes overpressured, deformation of the safely lip guide or separation of disc will occur.



Overload Protection:

The piston rod is designed for controlled gas venting between the seal and the piston rod with a specially designed guide and fundamental safety stop in the event of an overload caused by a jammed tool, part or rod side-load.



Additionally, the majority of HYSON springs are **PED** (Pressure Equipment Directive) approved to withstand a minimum of <u>2 million</u> full cycles according to PED (2014/68/EU). Many of our competitors are in compliance of PED, but compliance is unequal to the 2 million cycle test and approval that HYSON gas springs have undergone. This is one more assurance that with HYSON Nitrogen Gas Springs, you receive an added value of reliability and operational excellence.

GENUINELY HYSON SAFETY APP

Created to enable safer working environments and fight against unsafe counterfeit springs in manufacturing facilities around the globe, the Genuinely HYSON Safety App authenticates nitrogen gas springs with HYSON labeling have the design and safety features customers have come to expect with the HYSON brand. The app is available for download at www.HysonSolutions.com.





IDEAL WHERE SPACE IS LIMITED AND VERY HIGH FORCES ARE REQUIRED

Table of Contents Page

PED - Pressure Equipment Directive	2
Product Features	2
Initial Force	2
ISO: 9001:2015 Certification	2
Product Specifications	3
Repair Kits	3
Ordering Instructions	3
Mounting Options	3
T4SC-420	4
T4SC-740	6
T4SC-1000	8
T4SC-1800	10
T4SC-2900	12
T4SC-4700	14
T4SC-7500	16
T4SC-11800	18
T4SC-18300	20



General Information

HYSON Metal Forming Solutions, headquartered in Brecksville, Ohio, is a world class engineering and manufacturing company that provides high-quality, safety-engineered force and motion control solutions for a wide range of applications and industries, including automotive, aerospace, appliance, medical and HVAC. HYSON partners with our customers to understand applications and provide the best solutions for each one. We are a full service force and motion control provider for critical machine, vehicle and precision metal processing applications, meaning we supply dependent upon each customer's needs, including: gas springs, cam systems, cushions, manifolds and knockout systems.

Our success lies with our commitment to continually improve ourselves, our processes and our products to ensure we meet or exceed our customers' expectations. Our ISO-9001, AS-9000 and PED certifications attest to our ongoing commitment to the highest standards of quality.



PED - Pressure Equipment Directive

HYSON gas springs are designed to meet customer expectations for reliability, safety and service lifetime. The design, manufacture and testing of HYSON gas springs has been approved according to the European Pressure Equipment Directive (2014/68/EU).

The Pressure Equipment Directive (PED) replaces all previous European legislation governing the design, manufacture and testing of pressure vessels.



Product Features

- T4SC gas springs are very compact bore-sealed springs, which provide the highest force per cylinder diameter. These gas springs are ideal where space is limited in the die and very high forces are required.
- T4SC gas springs can be hosed together and charged remotely using a control panel and hose system.
- As an option, the T4SC-1000 to 18300 springs can be delivered with a Side Port plate (SP) for applications where a side port is needed (e.g., for use in hose systems).
- From T4SC-1800 to 18300, the new compact unit is supplied with a new stroke length of 65mm.

Initial Force

Calculation of charge pressure (bar) for T4SC to achieve desired initial force (N):

X = Desired initial force in N

Charge pressure = 150 •
$$\frac{X}{\text{Initial force at 150 bar}}$$

Example: T4SC-4700 to have a desired initial force of 25,000 N

Charge pressure =
$$150 \cdot \frac{25,000}{47,000} \approx 80 \text{ bar}$$





ISO: 9001:2015 CERTIFICATION

Focused on meeting customer expectations, ISO 9001 is an internationally recognized standard for quality management with certificates issued to organizations in 178 countries. This highly regarded certification reflects HYSON's ongoing commitment to deliver solutions that meet the highest quality standards.



Product Specifications

Pressure MediumNitrogen
Max. Charging Pressure
Min. Charging Pressure
Operating Temperature
Force Increase by Temperature
Recommended Max. Strokes/Min for Models 420 & 740~50 to 100 @ 20°C
Recommended Max. Strokes/Min for Models 1000 & 1800~100 @ 20°C
Recommended Max. Strokes/Min for Models 2900, 4700, 7500, 11800 & 18300~80 to 100 @ 20°C
Max. Piston Rod Velocity
Max. Utilized Stroke
Inlet Valve4018112 in (T4SC-420 & 740 and T4SC-1800 through 18300) 56-072-5500 (T4SC-1000)
Rod SurfaceNitrited
Tank SurfaceNitrited

REPAIR KITS

Gas Spring	New Generation Order Number
T4SC-420	Not Repairable
T4SC-740	Not Repairable
T4SC-1000	3324835
T4SC-1800	3324836
T4SC-2900	3324837
T4SC-4700	3324838
T4SC-7500	3324839
T4SC-11800	3324840
T4SC-18300	3324841

ORDERING INSTRUCTIONS

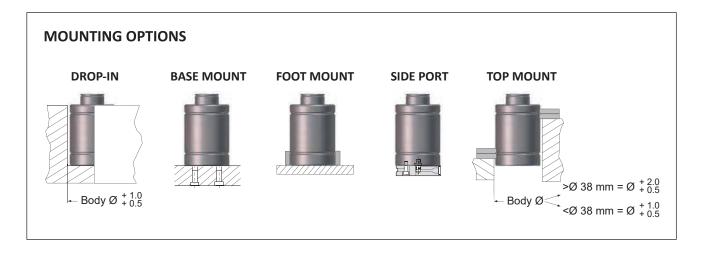
T4SC-XXXX

Χ

25

MODEL T4SC-420, T4SC-740, T4SC-1000, T4SC-1800, T4SC-2900, T4SC-4700, T4SC-7500, T4SC-11800, T4SC-18300 **STROKE (mm)**See Dimensional Information Charts

All gas springs shipped at maximum charge pressure unless otherwise specified.



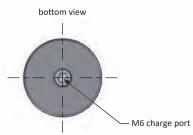
All dimensions are in millimeters unless otherwise noted.





Overload Protection







	Stroke		Contact Force* Full Stroke			Cylinder Height		Body Height		Gas	147.1.1.1	
Order Number (model x stroke)	:	S	2175 ps	i at 68°F For		ce*	Y ±0.25 Y ±0.010		L	L	Volume	Weight
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	e	kg
Preferred Stroke Lengths (optimal deli	very)										
T4SC-420x10	10	0.39		6,300	1,416	70	2.76	60	2.36	0.005	0.15	
T4SC-420x16	16	0.63	4,250	250 955	6,300	1,416	91	3.58	75	2.95	0.008	0.18
T4SC-420x25	25	0.98			6,400	1,439	120	4.72	95	3.74	0.011	0.22
Alternative Stroke Lengths	;											
T4SC-420x6	6	0.24			7,300	1,641	56	2.20	50	1.97	0.003	0.13
T4SC-420x32	32	1.26	4 350	4,250 955	7,900	1,776	140	5.51	108	4.25	0.021	0.24
T4SC-420x40	40	1.57	4,250		8,000	1,800	165	6.50	125	4.92	0.026	0.27
T4SC-420x50	50	1.97			8,000	1,800	195	7.68	145	5.71	0.032	0.31

NOTE: Stroke lengths of greater than 25 mm should be base or flange mounted.

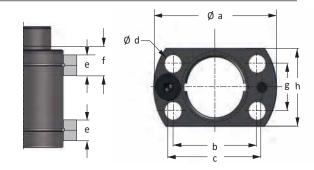
^{*}At full charge



FCR UPPER SQUARE FLANGE

Order No.	Ø	а	b		
	mm	in	mm	in	
FCR-180	50	1.97	34	1.34	

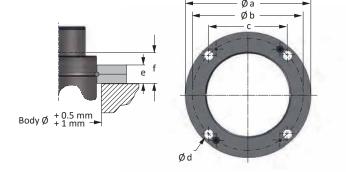
(С	Ø	Ød		е		f		3	h	
mm	in										
38	1.50	7	0.28	9	0.35	16	0.63	18	0.71	30	1.18



FC CIRCULAR FLANGE

Order No.

Ø	а	Ø b		С		Ød		е		f	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
50	1.97	38	1.50	35	1.38	7	0.28	9	0.35	16	0.63







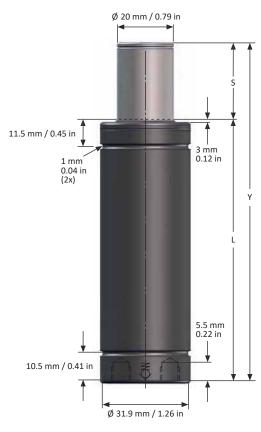
Overload Protection

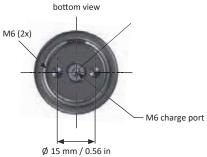


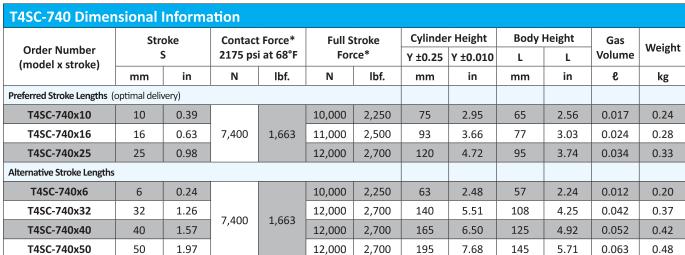
Overpressure



Overstroke







NOTE: Stroke lengths of greater than 25 mm should be base or flange mounted.

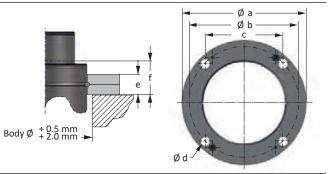
^{*}At full charge



FC CIRCULAR FLANGE

Order No.

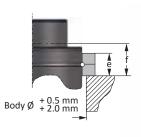
Ø a		Ø b		С		Ød		•	•	f		
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
60	2.36	49.5	1.95	35	1.38	7	0.28	9	0.35	16	0.63	

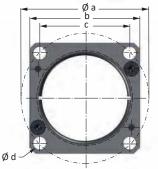


FCS UPPER SQUARE FLANGE

Order No.

	Ø a		b		С		Ød		е		f	
ŀ	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
7	19.5	1.36	45	1.77	35	1.38	7	0.28	9	0.35	16	0.63









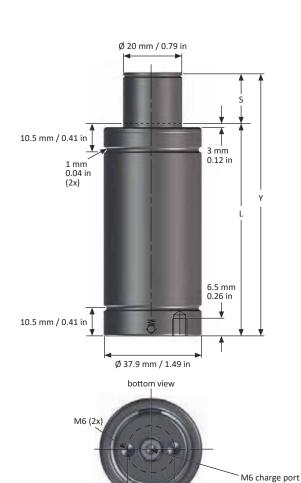
Overload Protection



Overpressure Protection



Overstroke Protection





	Str	oke	Contact	Force*	Full S	troke	Cylinde	r Height	Body Height		Gas	Weight
Order Number (model x stroke)	:	S	2175 ps	i at 68°F	68°F Force*		Y ±0.25	Y ±0.010	L	L	Volume	vveigni
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	e	kg
Preferred Stroke Lengths	optimal deli	very)										
T4SC-1000x10	10	0.39					78	3.07	68	2.68	0.024	0.38
T4SC-1000x16	16	0.63	10,600	2,400	16,000	3,597	100	3.94	84	3.31	0.036	0.44
T4SC-1000x25	25	0.98					135	5.31	110	4.33	0.056	0.54
Alternative Stroke Lengths	;											
T4SC-1000x6	6	0.24					61	2.40	55	2.16	0.014	0.33
T4SC-1000x32	32	1.26	10.000	2.400	16.000	2.507	167	6.57	135	5.31	0.074	0.65
T4SC-1000x40	40	1.57	10,600	2,400	16,000	3,597	195	7.68	155	6.10	0.092	0.73
T4SC-1000x50	50	1.97					230	9.05	180	7.08	0.110	0.83

Ø 17 mm / 0.67 in

NOTE: Stroke lengths of greater than 25 mm should be base or flange mounted.

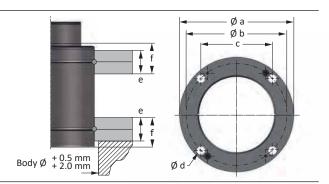
^{*}At full charge



FC CIRCULAR FLANGE

Order No.

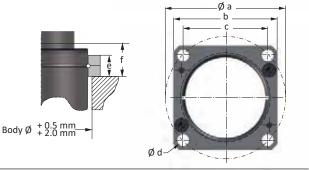
Ø	а	Ø	b	С		Ød			9	f		
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
68	2.68	56.5	2.22	40	1.57	7	0.28	9	0.35	15	0.59	



FCS UPPER SQUARE FLANGE

Order No.

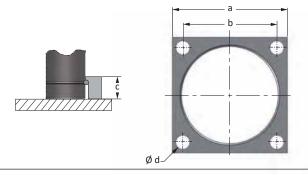
Ø	Ø a		b		С		Ø d		9	f	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
56.5	2.22	52	2.05	40	1.57	7	0.28	9	0.35	15	0.59



BF BASE MOUNT SQUARE FLANGE

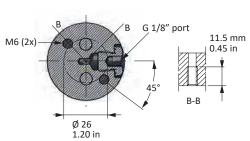
Order No.

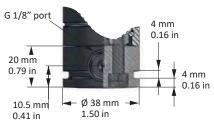
a	9	ŀ)	(С	Ød		
mm	in	mm	in	mm	in	mm	in	
52	2.05	40	1.57	14.5	0.57	7	0.28	



 $\textbf{SP} \ \ 1000 \ \ \text{The SP plates are compatible with the old generation T2SC}. The part numbers remain the same.}$

NOTE: The T4SC-1000-SP adapter plate has no valve and can be pressurised only through a hose. It is delivered uncharged.





Order No. 3116525





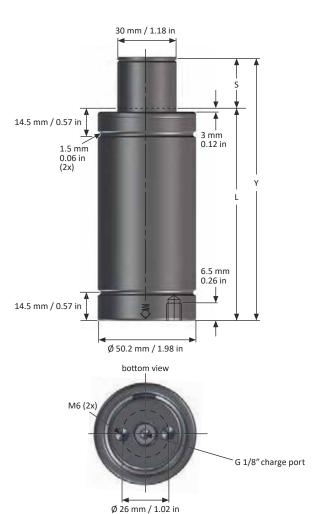
Overload Protection

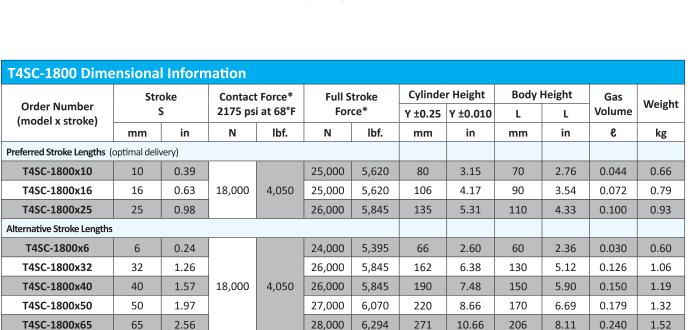


Overpressure Protection



Overstroke Protection





NOTE: Stroke lengths of greater than 25 mm should be base or flange mounted.

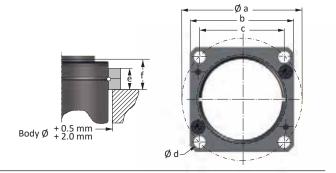
^{*}At full charge



FK UPPER SQUARE FLANGE

Order No. FK-1800

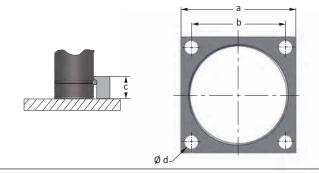
Ø	а	ŀ)		С	Ød		6	2	f		
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
80	3.15	70	2.76	56.5	2.22	9	0.35	13	0.51	21	0.83	



BF BASE MOUNT SQUARE FLANGE

Order No.

a		ŀ)		С	Ød		
mm	in	mm	in	mm	in	mm	in	
70	3.76	56.5	2.22	19.5	0.77	9	0.35	

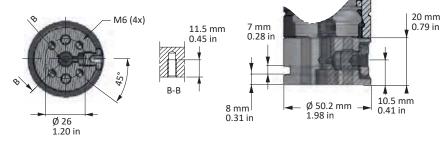


 $\textbf{SP} \ \ \textbf{1800} \ \ \text{The SP plates are compatible with the old generation T2SC}. The part numbers remain the same.}$

NOTE: The T4SC-1800-SP adapter plate has no valve and can be pressurised only through a hose. It is delivered uncharged.

NOTE: Side port attachment fitting part #4016253 included.









Overload Protection



Overpressure



Overstroke Protection





T4SC-2900 Dime	T4SC-2900 Dimensional Information												
	Str	oke	Contact	Force*	Full S	troke	Cylinde	r Height	Body	Height	Gas	Weight	
Order Number (model x stroke)		S	2175 si a	at 68°F For		ce*	Y ±0.25	Y ±0.010	L	L	Volume	weight	
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	ક	kg	
Preferred Stroke Lengths (optimal deli	very)											
T4SC-2900x10	10	0.39			40,000	8,990	85	3.35	75	2.95	0.08	1.14	
T4SC-2900x16	16	0.63	29,500	6,630	42,000	9,442	103	4.05	87	3.42	0.12	1.28	
T4SC-2900x25	25	0.98			45,000	10,120	130	5.12	105	4.13	0.16	1.49	
Alternative Stroke Lengths													
T4SC-2900x32	32	1.26			46,000	10,340	150	5.90	118	4.64	0.20	1.64	
T4SC-2900x40	40	1.57	20 500	6 630	47,000	10,570	175	6.89	135	5.31	0.24	1.83	
T4SC-2900x50	50	1.97	29,500	6,630	45,000	10,120	205	8.07	155	6.10	0.29	2.06	
T4SC-2900x65	65	2.56			47,000	10,570	256	10.08	191	7.52	0.35	2.39	

^{*}At full charge



FCX UPPER SQUARE FLANGE

Order No.

Ø	а	ı)	(С	Ø	d	•	<u> </u>	1	f
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
104	4.09	90	3.54	73.5	2.89	11	0.43	16	0.63	27	1.06

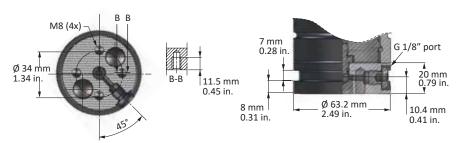
Body Ø + 0.5 mm

SP 2900 The SP plates are compatible with the old generation T2SC. The part numbers remain the same.

NOTE: The T4SC-2900-SP adapter plate has no valve and can be pressurised only through a hose. It is delivered uncharged.

NOTE: Side port attachment fitting part #4016253 included.









Overload Protection

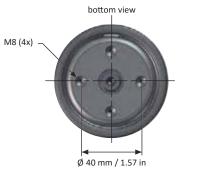


Overpressure Protection



Overstroke



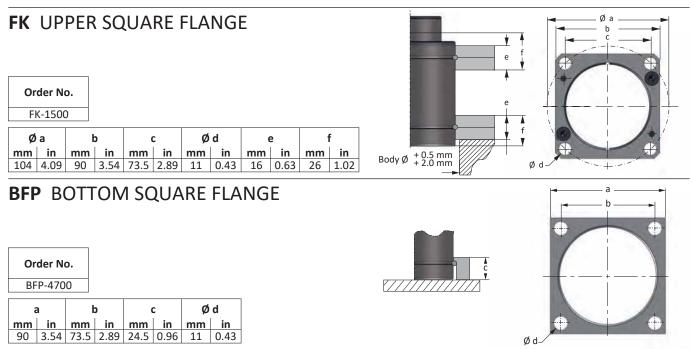


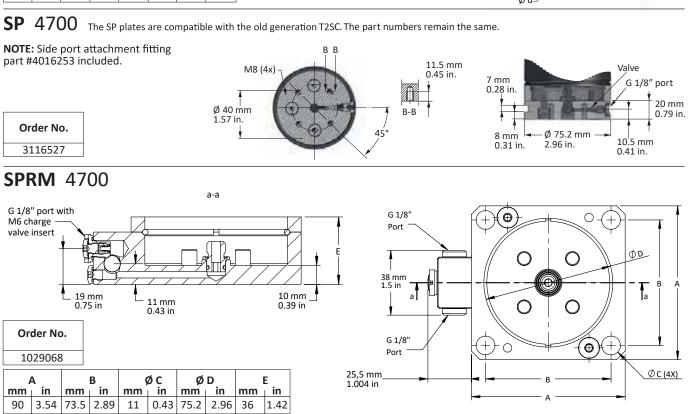


T4SC-4700 Dime	T4SC-4700 Dimensional Information												
	Str	oke	Contact	Force*	Full S	troke	Cylinde	r Height	Body	Height	Gas	Weight	
Order Number (model x stroke)	:	S	2175 ps	i at 68°F	Force*		Y ±0.25	Y ±0.010	L	L	Volume	weigiit	
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	e	kg	
Preferred Stroke Lengths (optimal deli	very)											
T4SC-4700x10	10	0.39			67,000	15,062	80	3.15	70	2.75	0.10	1.55	
T4SC-4700x16	16	0.63	47,000	10,600	66,000	14,837	106	4.17	90	3.54	0.17	1.79	
T4SC-4700x25	25	0.98			68,000	15,287	135	5.31	110	4.33	0.24	2.05	
Alternative Stroke Lengths													
T4SC-4700x32	32	1.26			67,000	15,062	167	6.57	135	5.31	0.32	2.34	
T4SC-4700x40	40	1.57	47.000	10.600	67,000	15,062	200	7.87	160	6.29	0.41	2.65	
T4SC-4700x50	50	1.97	47,000	10,600	67,000	15,062	240	9.45	190	7.48	0.52	3.01	
T4SC-4700x65	65	2.56			71,000	15,961	273	10.75	208	8.19	0.62	3.12	

^{*}At full charge











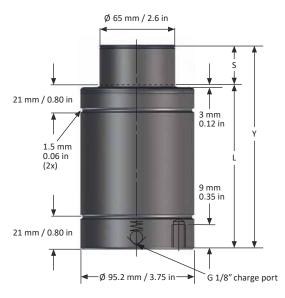
Overload Protection

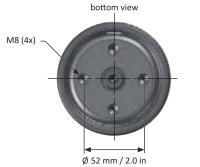


Overpressure Protection



Overstroke



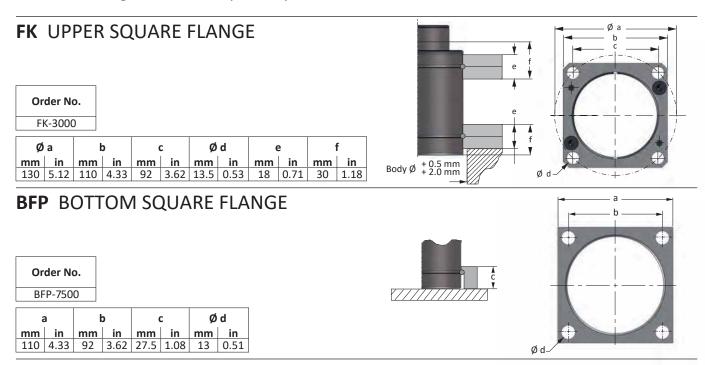




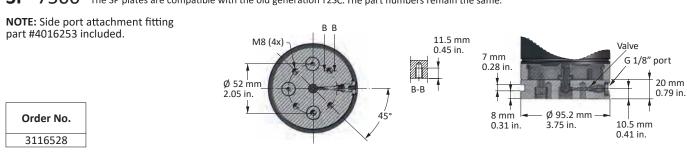
T4SC-7500 Dime	T4SC-7500 Dimensional Information												
	Str	oke	Contact	: Force*	Full S	Full Stroke		Cylinder Height		Body Height		Weight	
Order Number (model x stroke)		S	2175 ps	i at 68°F Ford		ce*	Y ±0.25	Y ±0.010	L	L	Volume	weight	
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	e	kg	
Preferred Stroke Lengths (optimal deli	very)											
T4SC-7500x10	10	0.39			98,500	22,143	90	3.54	80	3.15	0.18	2.86	
T4SC-7500x16	16	0.63	75,000	16,650	100,000	22,480	116	4.56	100	3.94	0.30	3.22	
T4SC-7500x25	25	0.98			104,000	23,380	145	5.70	120	4.72	0.41	3.61	
Alternative Stroke Lengths													
T4SC-7500x32	32	1.26			102,000	22,930	182	7.16	150	5.90	0.57	4.14	
T4SC-7500x40	40	1.57	75 000	16.650	104,000	23,380	210	8.27	170	6.69	0.68	4.52	
T4SC-7500x50	50	1.97	75,000	16,650	103,000	23,155	255	10.04	205	8.07	0.87	5.15	
T4SC-7500x65	65	2.56			111,000	24,953	379	14.92	214	8.42	1.00	5.23	

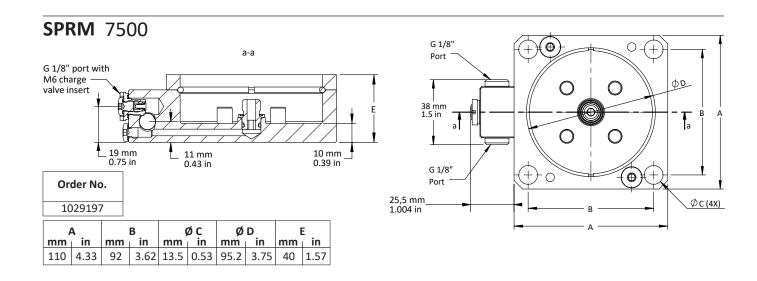
^{*}At full charge





SP 7500 The SP plates are compatible with the old generation T2SC. The part numbers remain the same.









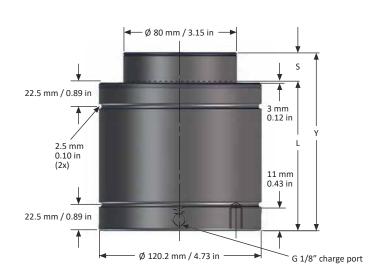
Overload Protection

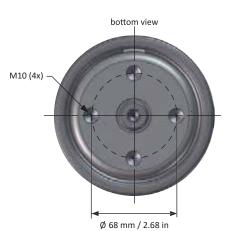


Overpressure Protection



Overstroke



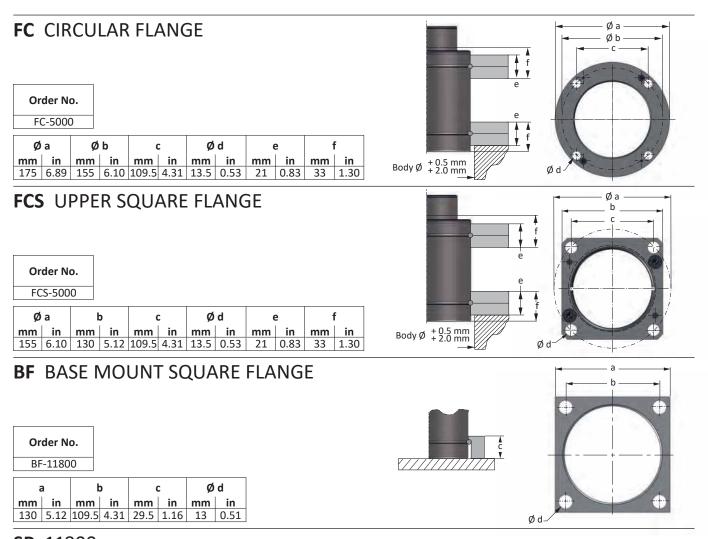




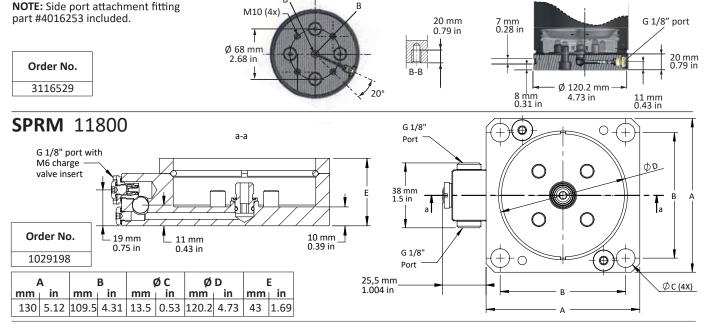
T4SC-11800 Dim	T4SC-11800 Dimensional Information												
	Str	oke	Contact	Force*	Full S	troke	Cylinde	r Height	Body	Height	Gas	Weight	
Order Number (model x stroke)		S	2175 ps	i at 68°F	For	Force*		Y ±0.010	L	L	Volume	weigiit	
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	e	kg	
Preferred Stroke Lengths (optimal deli	very)											
T4SC-11800x10	10	0.39			150,000	33,721	100	3.94	90	3.54	0.33	4.95	
T4SC-11800x16	16	0.63	118,000	26,527	153,000	34,395	126	4.96	110	4.33	0.50	5.55	
T4SC-11800x25	25	0.98			160,000	35,969	155	6.10	130	5.12	0.60	6.17	
Alternative Stroke Lengths													
T4SC-11800x32	32	1.26			165,000	37,093	187	7.36	155	6.10	0.88	6.90	
T4SC-11800x40	40	1.57	110 000	26 527	160,000	35,969	220	8.66	180	7.09	1.00	7.65	
T4SC-11800x50	50	1.97	118,000	26,527	161,000	36,194	260	10.24	210	8.27	1.35	8.55	
T4SC-11800x65	65	2.56			163,000	36,643	320	12.60	255	10.04	1.90	9.56	

^{*}At full charge





 $\textbf{SP} \hspace{0.1in} \textbf{11800} \hspace{0.1in} \textbf{The SP plates are compatible with the old generation T2SC.} \hspace{0.1in} \textbf{The part numbers remain the same.} \\$







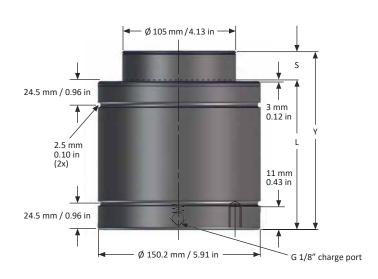
Overload Protection

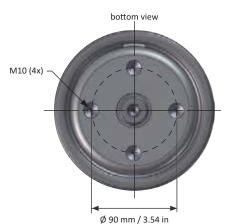


Overpressure Protection



Overstroke



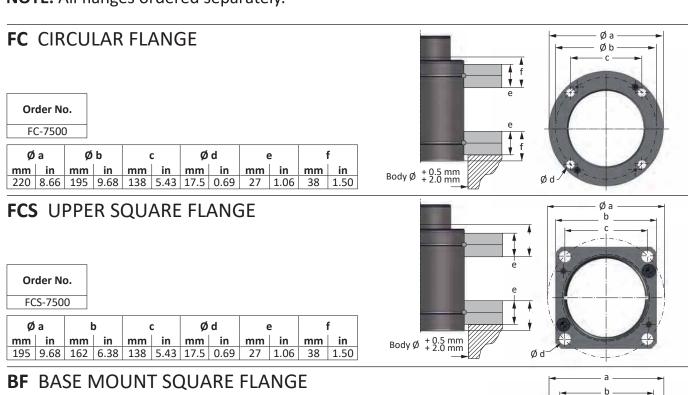




T4SC-18300 Dimensional Information												
	Str	oke	Contact	Force*	Full S	troke	Cylinde	r Height	Body	Height	Gas	Weight
Order Number (model x stroke)	!	S	2175 ps	i at 68°F For		ce*	Y ±0.25	Y ±0.010	L	L	Volume	weigiit
(model x stroke)	mm	in	N	lbf.	N	lbf.	mm	in	mm	in	e	kg
Preferred Stroke Lengths (optimal deli	very)										
T4SC-18300x10	10	0.39			227,000	51,031	110	4.33	100	3.94	0.56	8.78
T4SC-18300x16	16	0.63	183,000	41,140	233,000	52,380	136	5.35	120	4.72	0.84	9.72
T4SC-18300x25	25	0.98			244,000	54,853	165	6.50	140	5.51	1.13	10.71
Alternative Stroke Lengths												
T4SC-18300x32	32	1.26			244,000	54,853	197	7.76	165	6.50	1.45	11.80
T4SC-18300x40	40	1.57	192 000	41 140	244,000	54,853	235	9.25	195	7.68	1.86	13.28
T4SC-18300x50	50	1.97	183,000	41,140	248,000	55,752	270	10.63	220	8.66	2.19	14.50
T4SC-18300x65	65	2.56			253,000	56,876	323	12.72	258	10.16	2.90	16.30

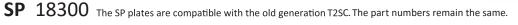
^{*}At full charge

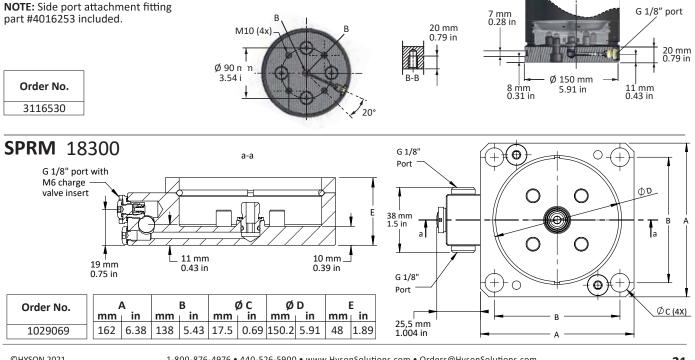














www.HysonSolutions.com

E-mail: Orders@HysonSolutions.com